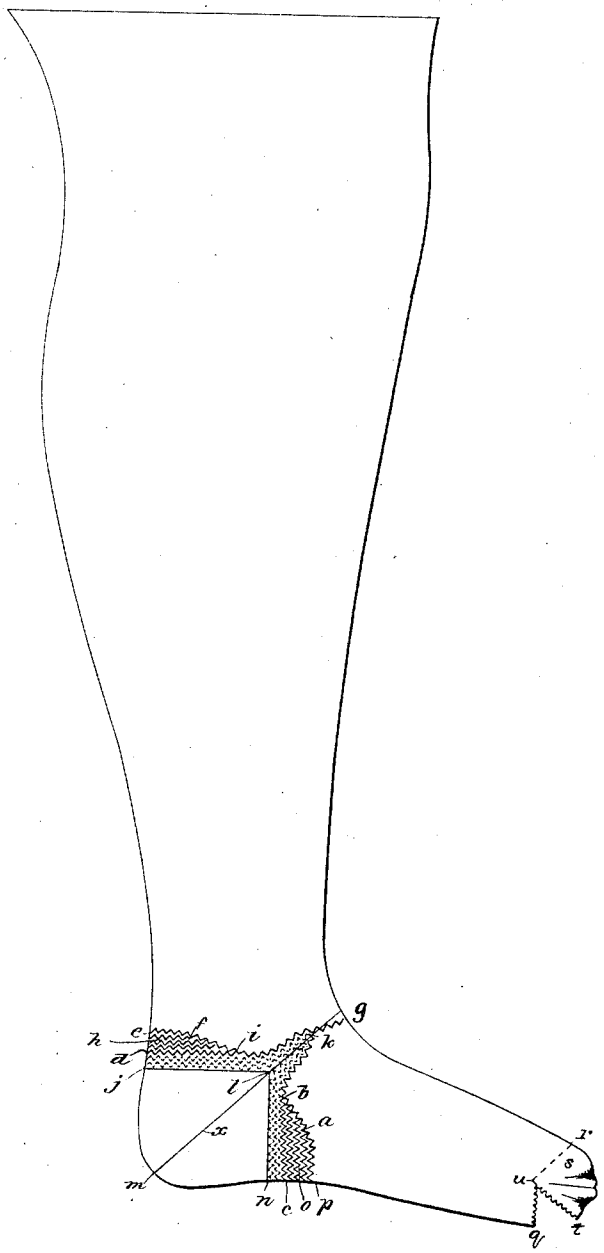
(No Model.)

G. A. WHITE.

STOCKING.

No. 450,655 Patented Apr. 21, 1891.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE A. WHITE, OF BOSTON, MASSACHUSETTS.

STOCKING.

SPECIFICATION forming part of Letters Patent No. 450,655, dated April 21, 1891.

Application filed March 10, 1886. Renewed September 29, 1890. Serial No. 366,455. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE A. WHITE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stockings, of which the following is a specification.

My invention relates to stockings, and has for its object to so improve the form of the heel of a stocking or sock that the same may fit the foot of the wearer more smoothly and perfectly than the stockings or socks now commonly in use, and at the same time avoid the "eyelet-holes" usually found in machine-knit stockings at the center points at the sides of the heels.

To this end my invention consists in a stocking or sock having a heel constructed as hereinafter more fully described and claimed.

The accompanying drawing, forming part of this specification, is a side view of a stocking having a heel constructed in accordance with my invention.

In the manufacture of my improved stocking I knit the leg of the same in any approved manner, preferably on a circular-knitting machine, beginning at the top and knitting downward. At the point *e* I commence the formation of the heel, and this may be accomplished by throwing up and out of operation all of the needles from the point *f* to the point *g* and around to a point corresponding to that marked *f* on the opposite side of the stocking. Then by reciprocating the cylinder and operating mechanism of the machine in a way so well known to knitting artisans as not to require explanation here I preferably knit a gusset or gore *h* between the points *e f i d* by rapidly widening or bringing into operation additional needles at each reciprocation of the operating mechanism of the machine. I then form what may be designated a "second gore or gusset" by bringing into operation all of the needles on each side of the machine required to knit from the point *d* to the point *k* (which latter point is usually about eight or ten stitches beyond the center point of the knitted tube, of which the stocking is formed) and knitting back and forth once, forming two rows of stitches. I then throw out of operation the needles holding the stitches from the center point *l* to point *k* and proceed to knit what is known as a "bulge-heel" in the usual manner, gradually narrowing down to the point *m* by throwing needles out of operation at each reciprocation of the machine, but allowing them to retain the stitches or loops formed thereon and gradually widening from the point *m* to points *n l* by bringing into operation the needles previously thrown out. I then knit two courses from the point *n* to point *k*, as I did before commencing to knit the bulge part of the heel indicated by the lines between the points *j l n*, then throwing out of operation the needles employed to knit between the point *k* and point *b*. Next by a narrowing process I knit a gore or gusset *o* between the points *c b p a*. After completing the gore or gusset I bring into operation all of the needles and knit a tube for the foot to the line *q u r*, when I preferably knit a "bulge-toe" *s* in a well-known manner and complete the stocking by joining the lines *q u t* by crocheting or otherwise.

I do not wish to be understood as limiting my invention in the formation of the heel of my improved stocking to the particular gores above described, as the essential feature of novelty of my invention consists in a seamless heel formed of gores above and below the central or gore meeting line *x*, running from or near the point *m* at the outside middle part or apex of the heel toward the instep, said gores extending to or near the point *k*, which is about midway between the point *l* at the centers of the leg and foot parts of the stocking and the front or instep point *g* of the stocking. By forming the extended heel-gores both above and below the central or gore meeting line *x* a full heel is secured when said gores are properly proportioned, which brings the foot part of the stocking so nearly to a right angle to the leg part thereof as to prevent any wrinkling of the stocking either at the instep or above the heel, and, moreover, by extending the gores to or near what may be termed the "three-quarter point" *k* the heel is sufficiently full, and is so fitted to the heel of the wearer as to prevent it from working down under the foot.

In knitting the heel I may or may not, as circumstances or taste may require, employ an additional thread, or a thread of a larger size or "number," or a thread differing from that employed in knitting the remainder of

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the stocking, and the same may also be done in knitting the toe *s*, if desired.

A heel knit in the manner described will be full and fashioned to fit the heel of the wearer, avoiding at the same time any wrinkling of the stockings at the instep-point and the eyelet-holes usually formed at the center points *l*, the latter objections being overcome by knitting the hereinbefore-described courses beyond the said center point, thereby permitting the strain usually brought on one or two needles at the center point to be distributed on all of the needles holding the stitches between the points *l* and *k*.

It will be understood that the needles thrown up or out of operation in the formation of the heel of my improved stocking always retain and hold the loops which they may have on them when thrown out, so that when again thrown in the knitting will proceed continuously, and the heel, when completed, will be one entire seamless or integral piece of knit fabric and also knit seamless or integral with the leg and foot portions of the stocking, thus requiring no subsequent sewing or crocheting to complete the stocking at the heel.

I am aware that it is old to form the heel portion of a stocking by knitting into the stocking a single large tapering piece or gore composed of a series of short rows of varying lengths and one or more rows or continuous rounds of stitches in the middle of said tapering piece, the series of short rows above the continuous rounds gradually increasing in length and the series of short rows below the continuous rounds gradually decreasing in length, the apex of the tapering piece or gore being in effect located beyond the center point of the leg and heel and between the said point and the instep-point; but a stocking having this single tapering piece or gore at its heel portion did not have sufficient fullness at the heel to prevent wrinkling at the instep-point when being worn, and on account of not properly fitting the heel would work down under the foot of the wearer.

I am also aware that it is old to form the heel of a stocking of a tapering piece or gore, the apex of which extends forward of the center point of the leg and foot parts of the stocking, and of gores above and below said tapering piece, the points of said last-named gores extending to the instep-point and the meeting edges thereof in advance of the said tapering piece being knitted together; but a stocking thus made had too much fullness at the ankle, and if the heel were re-enforced, as is necessary in order to secure proper durability, the trouble occasioned by the wrinkling would be still further increased. In my improved stocking, with the gores above and below the line *x* and extending to or near the three-quarter point *k*, all difficulty from wrinkling at the ankle or instep parts is avoided and such a full and perfectly-fitting heel is formed as effectually prevents the stocking from working down under the foot of the wearer.

What I claim is—

1. A stocking having a seamless heel constructed of a bulge portion *j l n* of usual form and having gussets or gores above and below said bulge portion, said gussets or gores extending to a point *k*, which is about midway between the center point *l* and the instep-point *g* or front of the stocking, and being knitted together on the meeting line of their inner ends, substantially as set forth.

2. A seamless stocking having a heel portion constructed of a bulge portion *j l n* of usual form and having gussets or gores between the points *d k l j* and *k n c b* above and below said bulge portion, and the gussets or gores *h* and *o* between the points *e f i d* and *c b a p* above and below the first-named gussets or gores, substantially as set forth.

3. A stocking or sock having a seamless heel formed of gores above and below a gore-meeting line running from, at, or near the apex or middle of the heel toward the instep, said gores extending to or near a three-quarter point *k*, which is about midway between the centers of the leg and foot parts of the garment and the instep-point or front of the stocking, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of March, 1886.

GEORGE A. WHITE.

Witnesses:

JOSIAH QUINCY,

ARTHUR W. CROSSLEY.